

Attorney Docket No. 5405-355
Application Serial No. 11/337,166
Filed: January 1, 2006
Page 7 of 11

REMARKS

Applicants appreciate the examination of the current application as evidenced by the Office Action dated April 4, 2008 (the “Action”). The Action objects to Figures 7 and 8 of the drawings. Claim 14 is objected to in the Action as improperly depending from a method claim. Claims 1-5 and 8-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Publication No. 2002/0108785 to Slaughter, Jr. et al. (“Slaughter”) in view of U.S. Patent No. 3,537,518 to Sullivan et al. (“Sullivan”). Claims 6 and 7 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Slaughter in view of Sullivan and in further view of U.S. Patent No. 5,580,188 to Nowak (“Nowak”).

Reconsideration is respectfully requested in view of the above amendments and the remarks that follow.

I. The Drawings

The Action objects to the drawings as not labeling separate figure numbers in Figures 7 and 8. Corrected drawings are submitted herewith. In addition, Applicants have amended the Specification above to refer to the separate figure numbers.

Accordingly, Applicants request that the objection to the drawings be withdrawn.

II. The Objection to Claim 14

The Action objects to Claim 14 as depending from Claim 8, which is a method claim. Claim 14 is directed to a drill bit. Applicants have amended Claim 14 to depend from Claim 9 for consistency.

Accordingly, Applicants request that the objection to Claim 14 be withdrawn.

III. The Section 103 Rejections

A. Claim 1

Independent Claim 1 is reproduced below:

1. A method for drilling a bore through a target including a ready made through bore, the method comprising:
advancing a drill bit into the target along the ready made

through bore in a direction of advancement from a region where a drill device arranged to drive the drill bit is located to a further region; and injecting a directing gas through at least one aperture in the drill bit so that gas ejected therefrom is directed in the direction of advancement; wherein

as the bore is drilled, directing waste material along the ready made through bore in the direction of advancement via the gas.

Applicants have amended independent Claim 1 to clarify that the target has a ready made through bore such that a directing gas is injected so that gas ejected through an aperture in the drill bit is directed in a direction of advancement. The direction of advancement is further clarified to indicate that the direction of advancement is from a region where a drill device configured to drive the drill bit is located to a further region. Support for the amendments can be found throughout the application in general, and in particular, on page 5, lines 24-25 and on page 7, lines 21-22.

Slaughter and Sullivan refer to a back reaming operation in which a drill stem is first threaded through an existing bore and then a back reaming bit is secured to the drill stem. The stem is then pulled back through the existing bore with the back reaming bit operating to enlarge the bore. *See* Sullivan, page column 1, lines 13-19 and 65-70; Slaughter, Abstract. In such systems, the waste material generated during the enlargement process is flushed back towards a region where the drill used to drive the drill stem is located. For example, Slaughter discusses that cuttings are lifted out of the conduit 7 in **Figure 1**. *See* Slaughter, paragraph [0026] (cited in the Action). Sullivan discusses that a drilling fluid is pumped downwardly through the string of the drill pipe, through the bit, and into the annular space outside the drill string to carry cuttings to the surface (*i.e.*, away from an advancing direction of the drill). *See* Sullivan, column 1, lines 5-9.

In contrast, Claim 1 as amended recites that the target has a ready made through bore such that a directing gas is injected so that gas ejected through an aperture in the drill bit is directed in a direction of advancement. In the case of potentially hazardous environments, as discussed on page 2, lines 6-27 of Applicants' specification, the direction of waste material back into a region where the drill is located as proposed by Slaughter and Sullivan could be hazardous to personnel. The potential hazards to personnel in hazardous environments are

not appreciated by Slaughter and/or Sullivan. Therefore, Applicants submit that this recitation is not disclosed or rendered obvious by the back reaming techniques discussed in Slaughter and Sullivan. These recitations are also not disclosed by Nowak, which is cited with respect to Claims 6 and 7.

For at least these reasons, Applicants submit that the recitations of independent Claim 1 are not disclosed or rendered obvious by the cited art. Claims 2-8 depend from Claim 1 and are patentable at least per the patentability of the claims from which they depend. Accordingly, Applicants respectfully request that the rejection of Claims 1-9 be withdrawn.

B. Claims 9 and 18

Independent Claims 9 and 18 are reproduced below:

9. A drill bit for drilling a bore through a target via a drilling process, comprising:

at least one cutting surface arranged to cut a bore having an internal diameter through the target as the drill bit advances into the target; and

at least one aperture in the drill bit for permitting a directing gas to be injected in a direction of advancement of the drill bit to thereby direct waste material, formed as the bore is drilled, in the direction of advancement; wherein

the drill bit further comprises a drill tip including the cutting surface and a shaft portion for connecting the drill tip to a drill device and the at least one aperture is formed radially outwardly in the shaft portion.

18. A drill, for use with a drill bit arranged for drilling a bore through a target, comprising:

a drill bit comprising:

at least one cutting surface arranged to cut a bore having an internal diameter through the target as the drill bit advances into the target; and

at least one aperture in the drill bit for permitting a directing gas to be injected in a direction of advancement of the drill bit to thereby direct waste material, formed as the bore is drilled, in the direction of advancement; wherein

the drill bit further comprises a drill tip including the cutting surface and a shaft portion for connecting the drill tip to a drill device and the at least one aperture is formed radially outwardly in the

shaft portion;

a rotor shaft arranged to rotate when driven;
a motor arranged to drive the shaft;
connection means for connecting the drill bit to the rotor
shaft;
a gas inlet arranged to receive pressurised gas from a
pressurised gas source; and
gas directing means arranged to inject gas from the inlet to
the drill bit thereby providing a directing gas flow in a direction of
advancement as the drill bit drills the bore.

Applicants submit that the above-emphasized recitations of Claims 9 and 18 are not disclosed or rendered obvious by Slaughter or Sullivan.

In particular, Claims 9 and 18 recite at least one aperture in the drill bit for permitting a directing gas to be injected in a direction of advancement of the drill bit to thereby direct waste material. As discussed above, Slaughter and Sullivan both discuss back reaming operations, in which the waste material generated during the enlargement process is flushed back towards a region where the drill used to drive the drill stem is located.

In addition, Claims 9 and 18 recite that the drill bit includes a drill tip and shaft portion and that the aperture through which directing gas is injected is located in the shaft portion. Applicants submit that this recitation is also not disclosed or rendered obvious by Slaughter or Sullivan. In fact, the configurations of Slaughter nor Sullivan could not be modified to utilize an aperture in a shaft of a drill stem because the back reaming bit (which performs the cutting operations) follows the stem, and thus, the cut material would not be directed in the direction desired by any apertures in such a drill stem (*i.e.*, back towards a region where the drill used to drive the drill stem is located).

For at least these reasons, Applicants submit that independent Claims 9 and 18 are patentable over the cited art. Claims 10 and 12-17 depend from Claim 9 and are patentable at least per the patentability of the claims from which they depend. Accordingly, Applicants request that the rejections of Claims 9-10 and 12-17 be withdrawn.

CONCLUSION

Attorney Docket No. 5405-355
Application Serial No. 11/337,166
Filed: January 1, 2006
Page 11 of 11

Accordingly, Applicants submit that the present application is in condition for allowance and the same is earnestly solicited. Should the Examiner have any matters outstanding of resolution, he is encouraged to telephone the undersigned at 919-854-1400 for expeditious handling.

Respectfully submitted,

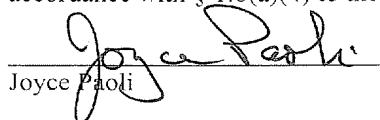


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